

Research on E-commerce Visual Marketing Analysis Based on Internet Big Data

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Abstract. Through the construction of the e-commerce vision system platform and the use of big data, the behavioural analysis of the customer groups of similarly designed products is carried out to solve the related problems in visual marketing. According to the characteristics of the user groups, the series of products are pushed out design service. Based on the current research summary of e-commerce platform marketing, the article aims at optimizing the e-commerce platform system and conducts comprehensive research from the cross perspective of marketing theory and visual design. Let the visual design system achieve precise services, promote local traditional industry e-commerce marketing conditions, achieve proactive adaptation to the new normal of economic development, and provide a reference for future design service innovation in the new era.

Keywords: Internet, big data, e-commerce system, visual marketing.

1. Introduction

Promote the implementation of the national big data strategy, accelerate the improvement of digital infrastructure, recommend data resource integration and development and sharing, ensure data security, accelerate the construction of a digital China, and better serve my country's economic and social development and the improvement of people's lives. Focusing on the implementation requirements of the national big data strategy, we will better promote the development of the big data industry. The development trend of the big data industry has penetrated various industries. Big data technology is developing rapidly on a global scale, including finance, automobiles, restaurants, telecommunications, and energy. Physical fitness and entertainment have accelerated the innovation and development of the industry and improved considerable benefits. With the development of scientific information technology, e-commerce has gradually emerged in the era and background of "Internet +", and more and more people have begun to engage in e-commerce activities, which has also brought great convenience to people's lives. In the online shopping environment, although consumers have achieved convenience in physical distance, to a certain extent, online shopping has increased the complexity of their product selection process. This is manifested in: First of all, consumers can only conduct preliminary communication through the visual language expressed by the product [1]. Visual language is mainly determined by visual symbols in the process of communication, to accept the subjective psychological identification and physical feelings from the individual. Therefore, the use of appropriate visual language has a



positive effect on improving consumers' online purchase intention. Secondly, the psychological changes in consumers' online shopping process also increase the complexity of transactions to a certain extent. In the online shopping environment, consumers still occupy an absolute position in terms of advantages. How to make their brands and products stand out among competitors' mobile advertising and e-commerce sales platforms, and grab consumers' minds, eyeballs and the degree of attention determines the effectiveness of brand marketing in the mobile Internet era. In summary, it is not difficult to see that "visual marketing" has become an indispensable part of brand marketing in the mobile Internet era.

2. E-commerce marketing and visual evaluation

2.1. E-commerce website experiential marketing strategy

With the development of new economic forms and the increase in user experience requirements, marketing theory has developed from "4P" with the enterprise as the core to "4C" with the needs of customers as the centre, and then to the "4V" theory which advocates differentiated precision marketing, as shown in Table 1. Shown.

Table 1. The theoretical model of experiential marketing

	background	feature	specific description	Product design application
4P	Production-centric era	Corporate perspective	1. Under the background of the era of shortage economy, a single product is supplied to all users; 2. The company pays attention to product production and product prices	Product function, processing cost
4C	Demand-centered era	Customer orientation	1. Consumer needs and expectations; 2. Cost and user purchasing power; 3. Convenient transactions; 4. Communicate with customers	User-centered product design, focusing on design interaction, ease of use, and service
4V	Personalized era	Humanized, high-tech	1. Customer difference, provide a variety of products and services; 2. Flexible functions, flexible design of essential functions, extended functions, and additional functions; 3. Value-added; 4. User resonance	Personalized customization of product design and service, from functional satisfaction to emotional satisfaction

"4P" is the general term for the four-factor combination of production-centric marketing, namely products, prices, locations, and promotional methods. The "4P" marketing concept is formed to adapt to the shortage economy. It is based on product strategy and looks at marketing from the perspective of the enterprise. "4C" is a combination theory, that is, a new marketing theory put forward by marketing scholars such as Professor Schultz from the perspective of customers, including customer needs and expectations, customer costs, the convenience of customer purchases, and communication between customers and companies. Based on the two-way communication, establish a long-term one-to-one relationship with consumers [2]. The "4C" theory moves from the "demand" level to the "desire" level. The key to success in marketing is to figure out "why consumers buy" or "how to please consumers." "4V" refers to differentiation, functionality, added value, and resonance Marketing mix theory. The first condition for creating a market is a new marketing view, which is different from the "4P" marketing mix in the era of production centre theory, and it is also different from the "4C" marketing mix in the era of "demand centre theory". It is a new marketing concept that conforms to the characteristics of individualization and high-tech economy, namely "4V" marketing mix.

The paper uses marketing models and data calculations to achieve user differentiation and precise services, increase product value adaptability, and improve satisfaction. First collect objective data such

as forums, microblogs, and transaction information; then put these data into the network marketing model, use the algorithm library method to classify and then use the powerful data calculation method; finally, according to the practical information extracted from these data, It is used in user behaviour analysis marketing based on big data, personalized recommendation marketing and big data analysis marketing based on modern communication tools, as shown in Figure 1.

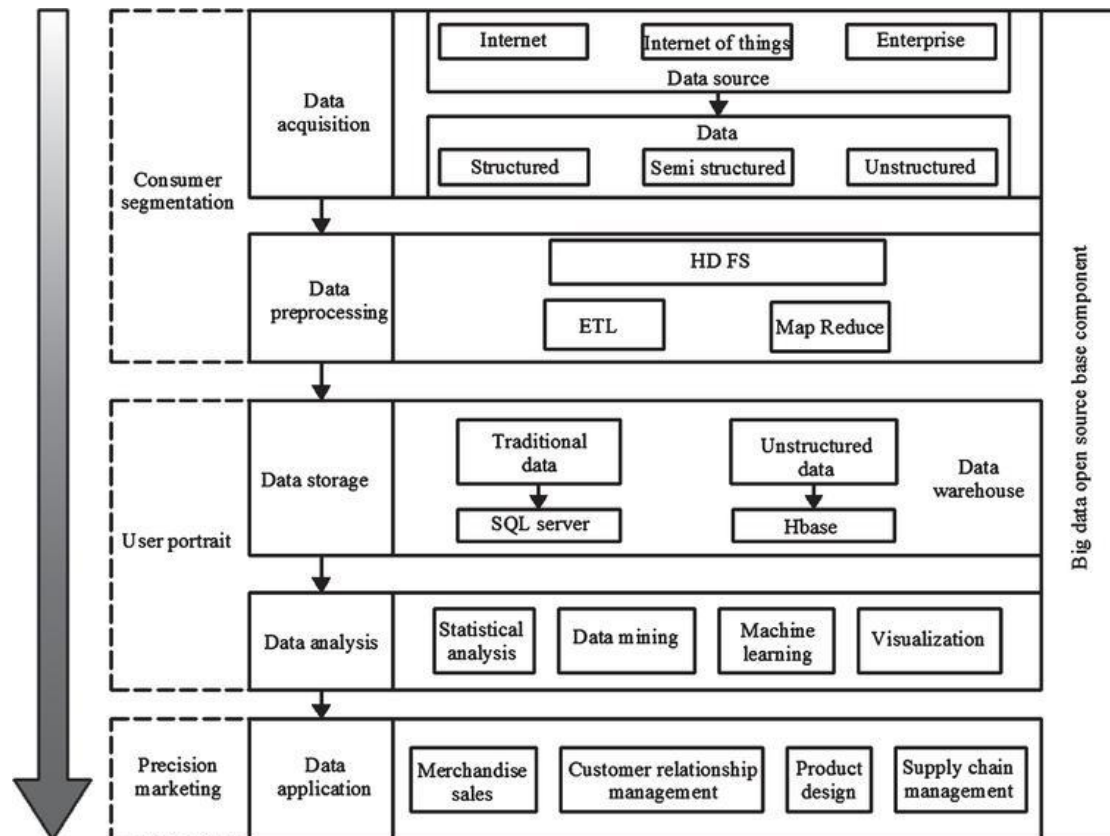


Figure 1. Precision marketing model based on big data

2.2. Visual web information

The visual design of a web page is composed of specific visual elements, which affect perception factors such as aesthetics and ease of use, and are also the basis for the establishment of web design generation methods. The visual performance evaluation in this article relies on the cognition of visual elements. E-commerce web design aesthetics can be expressed through elements such as colours, shapes, etc. The proper presentation of these elements with pictures, decorative fonts, and colourful graphic buttons can have a positive impact on the image of the website, and at the same time affect the interaction behaviour and perception of users Easy to use. When using an interactive system, users perceive and evaluate the characteristics of the system, such as aesthetics, ease of use, and usefulness. The layout is an essential factor that affects web page aesthetics and user browsing. A large number of articles have studied the difference between the perception of e-commerce page list layout and matrix layout [3]. The top-down browsing path of the list layout is more suitable for completing the task of searching for specific information and comparing information, while the matrix layout is evenly distributed for browsing. The path is suitable for casual browsing. Some scholars have put forward 14 aesthetic evaluation criteria for layout in their research, including balance, stability, symmetry, order, aggregation, consistency, proportion, simplicity, density, regularity, homogeneity, rhythm, complexity, etc. They believe that the format is Figure 2 shows some of the essential factors affecting website aesthetics.

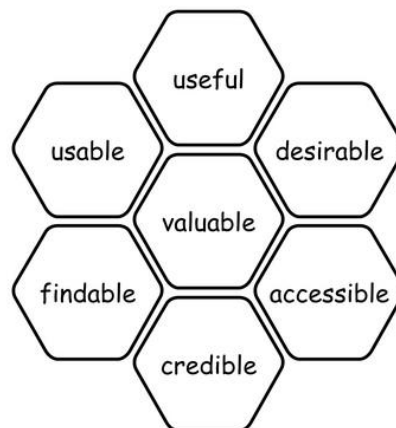


Figure 2. Layout aesthetic evaluation criteria

3. Visual marketing design system construction

3.1. The basic construction of the visual marketing platform

Based on the current research on e-commerce platform marketing, theoretically explore the business functions of the visual design application system under the big data environment, and aim at the boost mode of visual design for e-commerce marketing, which is mainly used in the design and development of series products, promote marketing, and enhance the development ability of the marketing platform to serve the professional fields of the industry [4]. In practice, adapt to the current development trend of big data so that more and more accurate analysis data can be better used on the visual design system platform to achieve consumer insights and timely feedback to the data platform, and continue to take the initiative for new user groups Push more precise design output to subvert the traditional design work mode, efficiently and conveniently handle some technical problems that need to be solved by human resources in traditional design, and connect high-quality resources in a new way with the goal of visual design The e-commerce competition model that drives products is the starting point to reduce the cost of human resources design, point to the surface, to cover the visual marketing of other products in the region, and promote the industrial upgrading of regional economic development.

3.2. Establishment of a visual marketing platform integrated with big data

The visual marketing platform under the integration of big data is a manifestation of the development of information technology. It plays a significant role in promoting and promoting productivity, inspiring creativity, building social, moral order, developing human intelligence, and improving thinking ability. For example, the business model currently adopted by Zhubajie.com is to obtain and integrate the original service transaction data of Zhubajie.com users, accurately grasp the needs of enterprise designers and customers, and then conduct service mining. Through data analysis of sold products, we can find out the needs of different consumer groups for category products, develop a visual design service platform, provide accurate services to customer groups conveniently and quickly, and provide users with professional and convenient design services by optimizing the allocation of resources; Discover the problems and marketing pain points in the process of visual product development, timely change the design positioning and direction, expand the diversity of visual marketing forms, and discover new business areas and unearth the huge hidden market; big data platform The establishment of the company promotes the effective integration and reasonable allocation of internal and external resources and information, enhances the company's core competitiveness, realizes a win-win situation for customers, businesses, and marketing platforms, and can reduce the essential cost of products including personnel, innovation, and operations [5]. The update of the platform is a manifestation of the principal value of the market. Figure 3 shows the significant data visual marketing platform system.

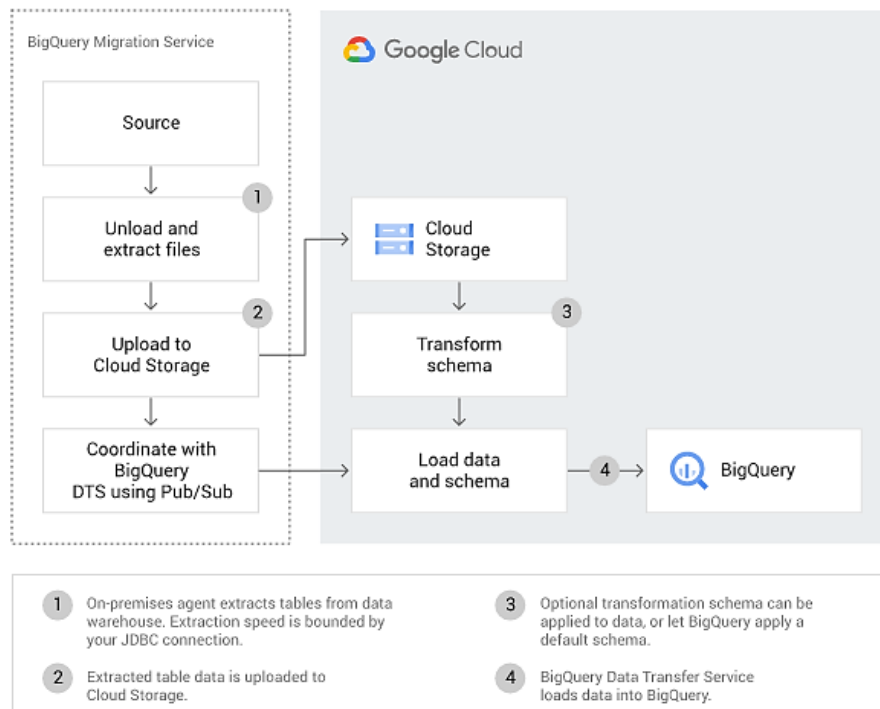


Figure 3. Big data visual marketing platform system

4. Visual marketing evaluation method framework

In order for companies to gain user insights, carry out precise e-commerce webpage visual design according to user needs, and enhance marketing value, this article organically integrates marketing performance evaluation with user cognitive emotion theory in product design, and proposes a research framework for e-commerce webpage visual marketing performance model. This theoretical framework starts from the user product "design dialogue" system in three aspects: "enterprise (e-commerce webpage visual design)-consumer (e-commerce user feedback)-use context (product category)", and explores web pages targeting marketing performance Visual design evaluation method. The evaluation method is based on the user's cognitive emotion model, and the user needs are imported into the design plan [6]. After the performance model evaluation, the company can improve the accuracy of marketing through the visual design of the e-commerce webpage. Visual precision marketing settings include three settings of information content, complexity, and aesthetics, respectively corresponding to satisfying users' instinctive functional needs (information acquisition), behavioural needs (search and browsing), and self-matching reflection needs (aesthetic preferences). The formula of the visual performance evaluation model is:

$$S^{\text{Overall evaluation}} = f(A^{\text{aesthetics}}, E^{\text{Search behavior}}, U^{\text{Goodness of information}}) \quad (1)$$

$$S = Fa * A + Fe * E + Fu * U \quad (2)$$

S (overall evaluation), A (aesthetic performance), E (search behaviour performance), U (information goodness performance), Fa, Fe, Fu are respectively the influence of aesthetics, search behaviour, and information goodness in the overall evaluation Weights. When the webpage vision meets the user's aesthetic preference, it attracts more attention resources and promotes the acquisition of webpage product information [7]. As a perceptual factor, aesthetics has specific criteria for different environments and different users. Therefore, according to the perceptual engineering method, the perceptual word

A_1, A_2, \dots, A_n is introduced as the judgment index of aesthetics A, and the relationship between visual element D_1, D_2, \dots, D_n and perceptual words is established, as shown in Figure 4.

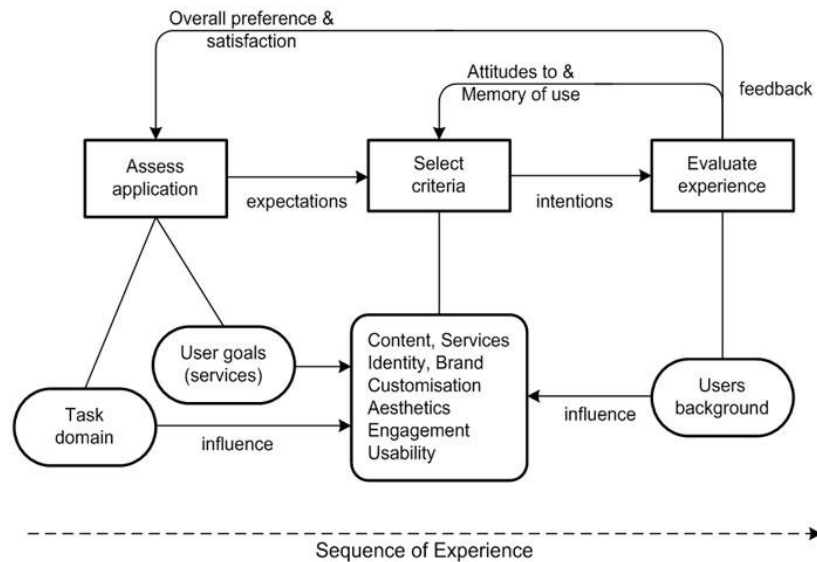


Figure 4. Aesthetic performance evaluation model

5. Conclusion

Using big data methods, conduct behaviour analysis, information feedback, summary of existing problems, analysis of causes, and proposal of solutions to customer groups of similarly designed products in the product. The data platform forms an organic system. Therefore, according to the characteristics of the product user group, the poster design, packaging design, e-commerce art design, etc. in the product are pushed out, so that the visual design system can achieve precise services, enhance the brand building and promotion capabilities of the government and enterprises, and realize active adaptation the new normal of economic development, thereby promoting the effect of product marketing.

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